



John C. Stennis Space Center



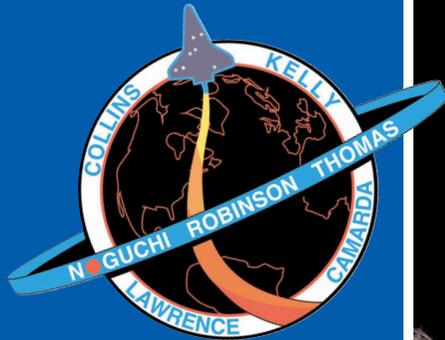
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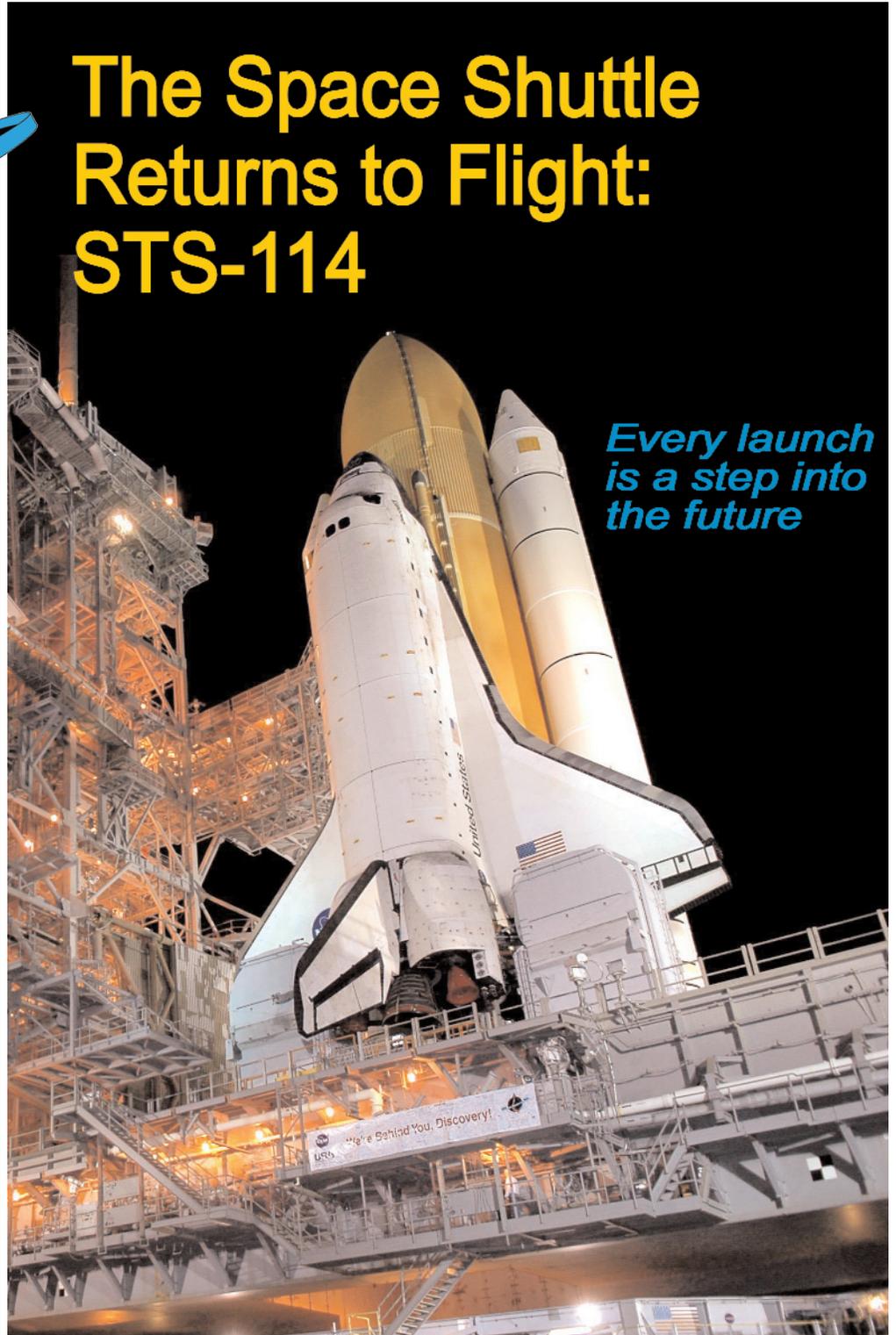
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SUMMER 2005



The Space Shuttle Returns to Flight: STS-114

Every launch is a step into the future



Inside:

- 30 years of Space Shuttle Main Engine testing
- Administrator Griffin visits Stennis Space Center
- SSC's role in the Space Shuttle's Return to Flight
- SSC employees receive NASA Honor Awards

From the

D irector's esk

**STENNIS SPACE
CENTER DIRECTOR**

Adm. Thomas Q.
Donaldson V
USN (Ret.)



I firmly believe that people are the key to whatever business you're in, and for the past two years, the NASA family has been in the business of returning the Space Shuttle safely to flight.

Watching Space Shuttle Discovery lift off from Pad 39B at Kennedy Space Center for the STS-114 mission should have filled us all with an immense sense of pride.

I was proud because I appreciate what an enormous amount of important work and effort it took. But what I was most proud of is the people who made it happen – and if you're reading this, you're probably one of them, because we've all been working toward the same goal.

When Stennis was tasked with "growing ice" on foam panels under simulated Florida weather conditions, we came up with a facility that just a few weeks before was a parking lot. A lot of equipment and material had to be handled. Somebody had to deliver it, receive it, install it, maintain it – make sure it was all safe.

We brought back a totally "mothballed" test stand, A-1, in a very short period of time to prepare for possible Return to Flight flow-liner testing, which ultimately wasn't needed. But as it turned out, A-1 was in such good shape that we were able to test eight of the nine Space Shuttle Main Engine (SSME) Controllers needed for the Return to Flight Mission.

When NASA's Michoud Assembly Facility needed thermal imaging to help examine the foam insulation on the External Tank, the experts in our Applied Sciences Directorate answered the call.

And of course, we tested and proved flight-worthy all

the Return to Flight SSMEs, just as we've been doing for all the other Space Shuttle missions since 1975. In fact, May 19, 2005, marked the 30th anniversary of SSME testing here at SSC.

It has taken a total effort by our NASA/contractor team, an effort that has not gone unnoticed.

Earlier this year, there were some familiar faces on site to present some awards and tell us what they think. I'd like to share with you some of what they said.

Bill Parsons used to be Center Director at Stennis, and now he's the Space Shuttle Program Manager. His comments included:

"You've come a long way and done an outstanding job. You've got a great reputation, great reliability, and you've delivered. I appreciate what you've done for the Space Shuttle Program, and for Return to Flight."

Robert Lightfoot was director of our Propulsion Test Directorate a few years ago, and now he's Assistant Associate Administrator for the Space Shuttle Program at NASA Headquarters in Washington, D.C. This is some of what he said:

"It's no surprise that the Return to Flight work came to Stennis. I know you take a lot of pride in what you do, and I appreciate that. I take it for granted that you'll do a good job, because I worked with you so long."

High praise indeed from two gentlemen who know what they're talking about.

These comments, and many more, reflect the reputation and credibility of Stennis Space Center that will serve us well over the near and long term – and it's all because of the quality of our people, and I'm extremely proud to be associated with you all.

Thank you for a job well done. Welcome home, STS-114.

On the cover

Space Shuttle Discovery approaches the Rotating and Fixed Service Structures on Launch Pad 39B after rollout from the Vehicle Assembly Building at NASA's Kennedy Space Center in preparation for STS-114, NASA's Return to Flight mission.

SSC marks 30 years of Space Shuttle Main Engine testing

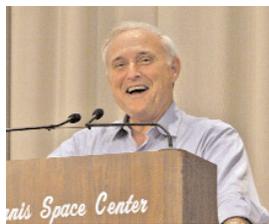
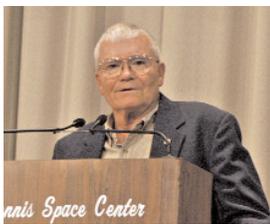


The commemorative coin included metal shavings from an SSME.

SSC celebrated its 30th anniversary of Space Shuttle Main Engine (SSME) testing Aug. 10-11. The first SSME test was on May 19, 1975, and since that historic day, SSC has conducted more than 2,200 tests.

Current and former employees, along with state and community leaders from Mississippi and Louisiana, marked the anniversary with guest speakers, a panel discussion and a test firing of a Space Shuttle Main Engine.

Guest speakers included Apollo 13 Astronaut Fred Haise, former SSC Director Roy Estess, Space Shuttle Program Manager Bill Parsons, and Assistant Associate Administrator of the Space Shuttle Program Robert Lightfoot. A panel discussion on the history of SSME testing included Bartt Hebert, chief engineer, SSC Propulsion Test Directorate; Gene Goldman, SSME project manager at Marshall Space Flight Center; Pat Mooney, former head of SSME testing at SSC; Ronnie Rigney, SSME project manager at SSC; George Hopson, NASA Engineering and Safety Center; Boyce Mix, former director of SSC Propulsion Test Directorate; Jim Paulsen, vice president and SSME program manager, Pratt & Whitney Rocketdyne; and Dave Geiger, SSC site director, Pratt & Whitney Rocketdyne.



Retirees who played major roles in the 30 years of SSME testing were recognized for their contributions.

The governors of Mississippi and Louisiana issued state proclamations, saluting “the remarkable accomplishments” of SSC on its 30th anniversary of SSME testing.



During the panel discussion, panelists answer questions about SSME testing.

Guest speakers, clockwise from top left: Apollo 13 Astronaut and Biloxi native Fred Haise; former SSC Director Roy Estess; Robert Lightfoot, Assistant Associate Administrator, Space Shuttle Program; and Space Shuttle Program Manager and former SSC director Bill Parsons.



NASA Astronauts Jerry Ross and Alan Poindexter viewed the SSME test.



Space Shuttle and SSME cakes highlighted the reception.



Current and former employees reunite for the 30th anniversary.

NASA Administrator Griffin visits SSC



NASA Administrator Mike Griffin (right) toured SSC facilities during a visit June 2. Pictured with Griffin are (from left) Miguel Rodriguez, director of SSC's Propulsion Test Directorate; Dave Geiger, SSC site director, Pratt & Whitney Rocketdyne; and Jim Wahl, deputy director, Pratt & Whitney Rocketdyne at SSC, during a tour of SSC's B Test Stand to learn more about Pratt & Whitney Rocketdyne's testing of the RS-68 engine.

NASA Administrator Mike Griffin visited NASA's Stennis Space Center (SSC) in South Mississippi on June 2 to tour the site and meet with employees.

On Griffin's first visit to SSC as NASA Administrator, he toured America's largest rocket engine test complex and learned about SSC's unique testing capabilities. SSC tests and proves flight-worthy all Space Shuttle Main Engines, as well as components that could power future spaceflight vehicles.

"My impression of Stennis Space Center is that it is a group of very capable people who maintain a key resource for the nation," Griffin said. "Stennis is the last place in the country where we can test large engines or whole rocket stages. Without Stennis, NASA doesn't have a place to do that. As long as NASA is in business, Stennis will be testing rockets."

Griffin spent time with NASA employees during a luncheon and an "all-hands" meeting where he answered employees' questions about agency matters. He then met test conductors in SSC's Test Control Center and from there watched a Space Shuttle Main Engine test.

Griffin was sworn in as NASA's 11th administrator on April 14, 2005. He was nominated by President George W.

"As long as NASA is in business, Stennis will be testing rockets."

-- NASA Administrator Mike Griffin

Bush on March 14, 2005, and confirmed by the U.S. Senate April 13.

Griffin returns to NASA having previously served as chief engineer and associate administrator for exploration at NASA Headquarters. He also worked at NASA's Jet Propulsion Laboratory in Pasadena, Calif. Prior to returning to NASA, Griffin headed the space department at Johns Hopkins University Applied Physics Laboratory.



Administrator Griffin (center), accompanied by Director of SSC's Propulsion Test Directorate Miguel Rodriguez (left) and SSC Center Director Adm. Thomas Q. Donaldson V, USN (Ret.), studies a Space Shuttle Main Engine during his visit to SSC.



The Space Shuttle Returns to Flight



Huge mounds of smoke and steam flow upward as Space Shuttle Discovery lifts off July 26 from Launch Pad 39B on the historic Return to Flight mission, STS-114. It was the 31st flight for Discovery.

On this mission to the International Space Station, the crew performed inspections on-orbit for the first time of all of the Reinforced Carbon-Carbon (RCC) panels on the leading edge of the wings and the Thermal Protection System tiles using the new Canadian-built Orbiter Boom Sensor System and the data from 176 impact and temperature sensors. Mission Specialists also practiced repair techniques on RCC and tile samples during a spacewalk in the payload bay.

Space Shuttle Discovery landed at Edwards Air Force Base at 8:12 a.m. EDT Aug. 9 after spending nearly two weeks in space, where the crew demonstrated new methods to inspect and repair the Shuttle in orbit. The crew delivered supplies, and outfitted and performed maintenance on the International Space Station.



Godspeed, STS-114

The STS-114 Mission:

- The STS-114 mission aboard Space Shuttle Discovery marked NASA's first flight since the loss of Columbia in 2003.
- The 14-day mission marked the return of the Shuttle supply trips to the International Space Station. Since Columbia, the Russian Soyuz spacecraft has carried food, water, experiments and crew members to the orbiting Space Station.
- Crew members tested new safety procedures and repair techniques, as well as delivered supplies and experiments.

The STS-114 Crew:

Eileen Collins, Commander: Born Nov. 19, 1956, in Elmira, N.Y., she is a veteran of three prior Shuttle flights, and was the first woman Shuttle pilot and commander.

James M. Kelly, Pilot: Born May 14, 1964, in Burlington, Iowa, he was the pilot on STS-102 in March 2001, and has logged more than 307 hours in space.

Charles J. Camarda, Mission Specialist: Born May 8, 1952, in Queens, N.Y., he has received more than 20 awards for technical innovations. This was his first space flight.

Wendy B. Lawrence, Mission Specialist: Born July 2, 1959, in Jacksonville, Fla., she is a veteran of three prior space flights, and has logged more than 894 hours in space.

Soichi Noguchi, Mission Specialist, Japan Aerospace Exploration Agency: Born in 1965 in Japan, Noguchi performed three extra-vehicular activities (spacewalks) on STS-114. This was his first space flight.

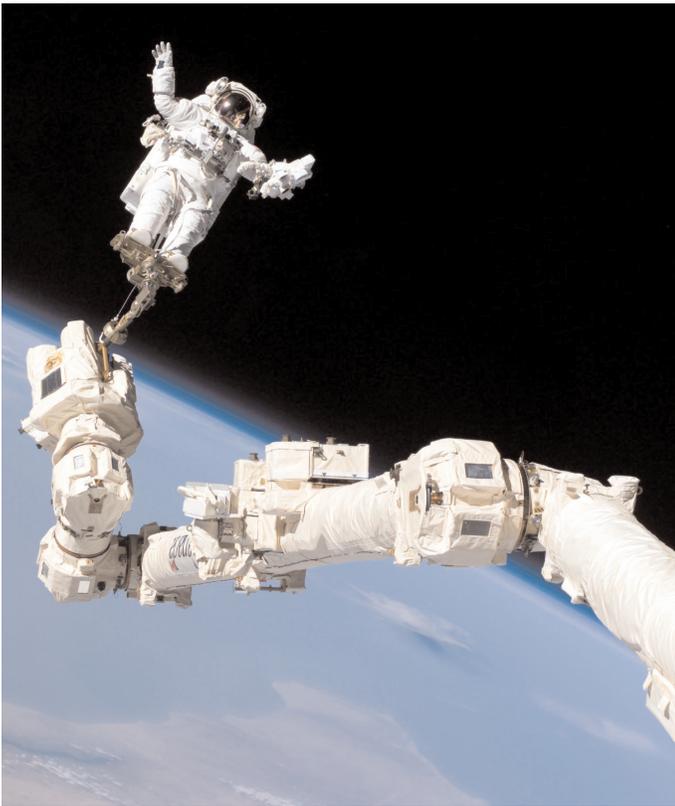
Stephen K. Robinson, Mission Specialist: Born Oct. 26, 1955, in Sacramento, Calif., he is a veteran of two prior space flights, and has logged more than 497 hours in space.

Andrew W. Thomas, Mission Specialist: Born Dec. 18, 1951, in Adelaide, South Australia, he is a veteran of three prior spaceflights and served aboard the Russian Space Station Mir for 130 days.



The STS-114 astronaut crew, from left: Mission Specialist Stephen Robinson, Pilot James Kelly, Mission Specialist Andrew Thomas, Mission Specialist Wendy Lawrence, Mission Specialist Charles Camarda, Commander Eileen Collins, and Mission Specialist Soichi Noguchi of the Japan Aerospace Exploration Agency.





Anchored to a foot restraint on the International Space Station's robotic arm, STS-114 Mission Specialist Stephen Robinson participates in the mission's third spacewalk.

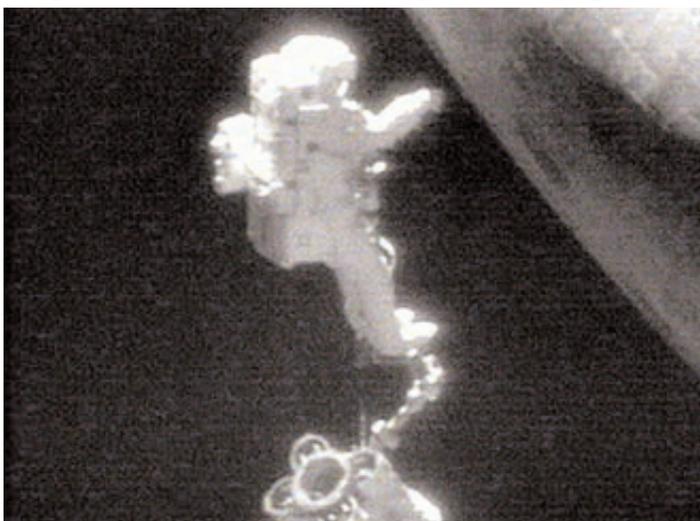


Above, President George W. Bush smiles as he waves goodbye to the crew of the Space Shuttle Discovery on Tuesday, Aug. 2, during a phone call from the White House. Below, in the stands at NASA Kennedy Space Center's Banana Creek viewing site, First Lady Laura Bush (center) applauds the successful liftoff of Space Shuttle Discovery on Return to Flight mission STS-114.



Mission filled with unprecedented successes

The Space Shuttle Discovery is home after a 14-day, 5.8 million-mile journey in space. The mission included breathtaking in-orbit maneuvers, tests of new equipment and procedures, a first-of-its-kind spacewalking repair, and



In a never-before-attempted spacewalk maneuver, Astronaut Stephen Robinson gently pulls two protruding gap fillers from between thermal protection tiles on Discovery's underside on the morning of Aug. 3.

virtual visits with two heads of state.

Commander Eileen Collins and the crew of the STS-114 mission, Jim Kelly, Charlie Camarda, Wendy Lawrence, Steve Robinson, Andy Thomas and Soichi Noguchi of Japan, landed at Edwards Air Force Base, Calif., on Aug. 9.

"We have had a fantastic mission," Collins said shortly after the crew disembarked from the Shuttle. "We brought Discovery back in great shape. This is a wonderful moment for us all to experience."

Discovery's mission, the first of two Return to Flight test missions following the 2003 Columbia accident, was one of the most complex space flights in NASA history. The crew flawlessly executed its to-do list.

After an on-time liftoff from Kennedy Space Center on July 26, the crew tested new capabilities and techniques developed over the past 2 1/2 years to inspect and possibly repair the Space Shuttle in orbit. Collins guided Discovery through an unprecedented back flip maneuver as it approached the International Space Station.

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MISSION SUCCESSES

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Before Space Shuttle Discovery docked with the International Space Station, it made a full back flip, exposing its heat shield for high-resolution digital photography by the Station crew. Discovery docked to the Station on Thursday, July 28, as the two spacecraft orbited over the southern Pacific.

The maneuver allowed the Station crew to snap high-resolution photos that added to the wealth of new data mission managers used to ensure Discovery was in good shape to come home.

“It’s going to be hard to top this mission,” NASA Administrator Michael Griffin said. “Everywhere you look, there’s nothing but outstanding success.”

Robinson and Noguchi, with the help

of crewmates, completed three spacewalks. The astronauts repaired one Space Station Control Moment Gyroscope and replaced another. Their efforts put all four of the Station’s gyros back into service. They also tested new repair techniques for the Space Shuttle’s heat-shielding outer skin and installed equipment outside the Station.

When two thermal protection tile gap-fillers were spotted jutting out of Discovery’s underside, astronauts and other experts on the ground devised a

plan to prevent the protrusions from “tripping the boundary layer,” causing higher temperatures on the Shuttle during atmospheric re-entry.

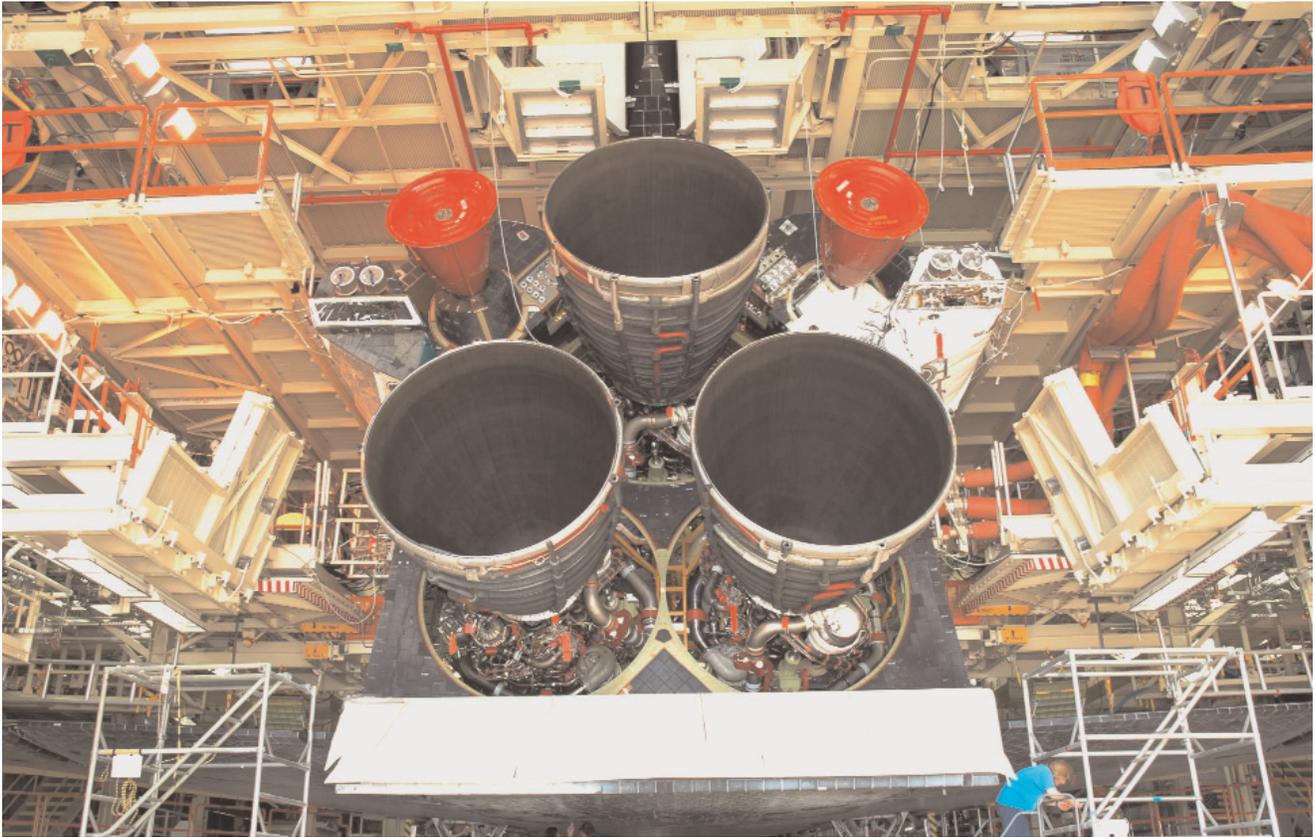
Ground controllers sent up plans to the Shuttle-Station complex for Robinson to ride the Station robotic arm beneath the Shuttle and, with surgical precision, pluck out the gap-fillers. Work on the Shuttle underbelly had never been tried before, but with Thomas coordinating, Lawrence and Kelly operating the robotic arms, and fellow spacewalker Noguchi keeping watch, Robinson delicately completed the extraction.

Discovery’s astronauts and the Station crew, Russian Sergei Krikalev and American John Phillips, transferred more than 12,000 pounds of equipment and supplies to the Station. Discovery returned about 7,000 pounds of Station material back to Earth.

The crew got phone calls from two world leaders. President George W. Bush and Japanese Prime Minister Junichiro Koizumi offered congratulations and appreciation for all the astronauts’ hard work.

Commander Collins and the crew also paid tribute to the fallen astronauts of Columbia, as well as others who gave their lives for space exploration.

Now engineers will process data from STS-114, the first of two test missions for the Space Shuttle. Teams are already at work looking into why a large piece of foam fell off the External Tank during ascent. NASA managers have committed to understanding why the foam came off the tank, and remedying it if necessary, before clearing the next Space Shuttle Return to Flight test mission, STS-121, for flight.



On Dec. 8, 2004, at the Orbiter Processing Facility at NASA's Kennedy Space Center (KSC), NASA completed installation of the three Space Shuttle Main Engines (SSMEs) that helped launch Space Shuttle Discovery on its Return to Flight mission. Engines number 2057, 2056 and 2054 were tested and proven flight-worthy at NASA's Stennis Space Center (SSC), where all SSMEs are tested.

Testing at SSC helps return Shuttle to flight

Employees at NASA's Stennis Space Center (SSC) saw the reward of more than two years' labor rise over the Florida peninsula on July 26. That's how long they worked to return the Space Shuttle to flight.

When Space Shuttle Discovery lifted off from Pad 39B at Kennedy Space Center (KSC), its seven-member crew was aboard a vehicle with improved safety features, due in part to tests conducted at SSC.

Discovery's three Space Shuttle Main Engines (SSMEs) were all tested and proven flight-worthy at SSC, passing final acceptance tests before the end of August 2004. All three were shipped to KSC, where they were installed on Discovery for STS-114, NASA's Return to Flight mission since the loss of Space Shuttle Columbia in 2003.



With a rumble and a rush of water vapor, a successful flight acceptance test was conducted at SSC for the first complete engine to be tested and shipped in its entirety to Kennedy Space Center for STS-114, NASA's Return to Flight mission.

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TESTING

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SSC has tested all SSMEs since 1975, so testing the Return to Flight engines was to be expected. What couldn't be expected was that SSC personnel would "grow ice" and examine foam insulation using thermal "cameras."

The External Tank foam insulation was the subject of a test series at SSC in November 2004. Engineers simulated weather conditions typical of Space Shuttle launch days in Florida to see what kinds of ice and frost form on the super-cooled tank.

To simulate those conditions, the test team mounted 2-foot-by-2-foot foam-covered panels on a metal frame, then "grew ice" by freezing them with liquid helium or liquid nitrogen.

Phase II testing was conducted in late February and early



On Oct. 5, 2004, SSC shipped the last of the three Space Shuttle Main Engines to NASA's Kennedy Space Center for installation on Space Shuttle Discovery for STS-114, the Return to Flight mission.

March of this year. Data from all the tests was used to help make launch-day decisions.



NASA engineer Bob Speece points out characteristics of ice formed in simulated weather conditions typical of Space Shuttle launch days while Scott Otto makes notations. Speece and Otto, an engineer with Lockheed Martin Space Services Co. - Michoud Operations, were at SSC, where four foam-covered panels were frozen in an experiment to determine what kind of ice and frost form on the Space Shuttle's external tank. Speece and Otto traveled from Kennedy Space Center, where they are members of a team that performs a final inspection of the External Tank prior to launch.

Most recently, SSC technicians used thermal imagers – "cameras" that turn infrared light emitted as heat into electronic signals that can be translated in images – to help Michoud Assembly Facility in New Orleans detect flaws in the External Tank foam. The imagers detect if there is an even coating of the foam on the metal, thus avoiding gaps and bubbles that could dislodge the foam and create a hazard.

"The work performed at Stennis Space Center for our Return to Flight effort is added testimony to the total team endeavor here," said SSC Center Director Adm. Thomas Q. Donaldson V, USN (Ret.). "We should all feel a deep sense of pride and accomplishment at Discovery's liftoff on the Return to Flight mission."

"We should all feel a deep sense of pride and accomplishment at Discovery's liftoff on the Return to Flight mission."

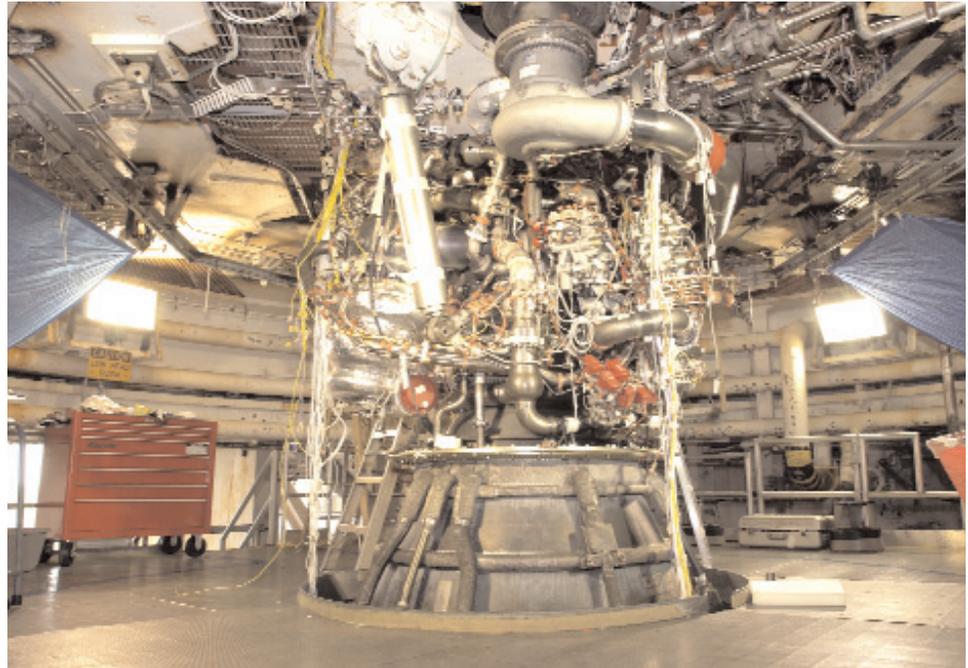
SSC Director Adm. Thomas Q. Donaldson V, USN (Ret.)

SSC's people propel Shuttle engines' Return to Flight

When Tony Mendez looks at a Space Shuttle Main Engine (SSME), he sees a highly durable, specialized, complex machine that's done for more than 20 years exactly what it was designed to do: propel the world's only reusable winged spaceships.

Mendez, an SSME technical associate with Pratt & Whitney Rocketdyne at NASA's Stennis Space Center (SSC), is one of about 130 engineers and technicians who work with SSMEs on a daily basis. Their work is helping NASA continue to carry out its plan to return the Space Shuttle to flight following the loss of Space Shuttle Columbia in February 2003. That plan plays a key role in NASA's Vision for Space Exploration, which includes completing work on the International Space Station by 2010.

Mendez works on SSC's A-2 Test Stand, where his job has included reading a mass spectrometer to ensure against leaks in the SSME heat exchanger.



A Space Shuttle Main Engine is installed on the A-2 Test Stand at NASA's Stennis Space Center, America's largest rocket engine test complex, where all the Shuttle's Main Engines are test-fired and proven flight-worthy.

"I look at this engine a lot differently now than I did the first time I saw it 20 years ago," Mendez said. "Everything has its place. I can tell right away if something's not right."

the same way."

Rene LeFrere of Slidell, La., an aerospace product technician with Pratt & Whitney Rocketdyne, said he asks himself every day: "Are we conducting the processes correctly? Are we paying attention to detail? We don't take anything for granted."

LeFrere works with Danny Wheat of Picayune, also an aerospace product technician, in Pratt & Whitney Rocketdyne's SSME warehouse and engine assembly facility, across the SSC campus from the A-2 Test Stand. Wheat has worked on SSMEs for 26 years.

Mendez, who lives in Picayune, Miss., is not alone in his knowledge of the SSME, his longevity on the job or his dedication to it.

"I make sure every time I do something, I do it 100 percent right," he said. "Every person working here feels

Wheat said, "The astronauts go through so much to get up into space for themselves and for their country. You don't want to see anything get in the way of that."



Don Albritton of Picayune, Miss., is an Space Shuttle Main Engine (SSME) technician with Pratt & Whitney Rocketdyne at SSC, one of about 130 engineers and technicians who work with SSMEs on a daily basis.

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Pratt & Whitney Rocketdyne's Tony Mendez of Picayune, Miss., works on a Space Shuttle Main Engine installed on the A-2 Test Stand at NASA's Stennis Space Center.

Because the lives of Space Shuttle astronauts depend on their vessels, Technician Don Albritton of Picayune sees it as his personal mission to make sure nothing erodes the astronauts' confidence in "his" engines.

"Their lives are on the line," said Albritton. "What we do determines if their mission succeeds. It all boils down to assuring their safety. It makes me proud to be part of the team that accomplishes that goal."

Terri Bennett, also of Picayune, echoed Albritton's sentiments. "We are a confident group. We all take pride in what we do."

One of the first women to work in SSC's engine test complex, Bennett started nearly 20 years ago as a mechanic. She is now a Pratt & Whitney Rocketdyne lead quality inspector on the A-1 Test Stand. Dedication to the space program is a family tradition. Her

father, James Bennett, worked at SSC during the 1960s, when NASA was testing the Saturn V engines that carried humans to the Moon.

"The first time I saw a Space Shuttle launch, I was overcome with emotion," she said. "Especially right before the engines shut down, because up until that moment, it was MY engine. There is nothing like knowing you can take that thing apart and put it back together."

Space Shuttle Discovery, NASA's Return to Flight mission STS-114, launched this summer. While the orbiter Discovery underwent extensive modification and maintenance at Kennedy Space Center in preparation for its return to flight, SSC engineers, mechanics and technicians went quietly about their work, making sure "their" Space Shuttle Main Engines continue to operate safely and perform well.



Danny Wheat of Picayune, Miss., is an SSME aerospace product technician with Pratt & Whitney Rocketdyne at SSC.

"This machine is so complex, but it works so flawlessly," Wheat said. "Our job is to make sure we work out any possible problem here – in processing or on the test stand – long before it gets to the launch pad or up into orbit."



Rene LeFrere of Slidell, La., prepares to work on an SSME. LeFrere is an SSME aerospace product technician with Pratt & Whitney Rocketdyne at SSC.

"What we do determines if their mission succeeds. It all boils down to assuring their safety. It makes me proud to be part of the team that accomplishes that goal."

Don Albritton, aerospace product technician

Shuttle Program officials award SSC employees' Return to Flight efforts

On March 17, members of SSC's Propulsion Test Directorate's (PTD) NASA-contractor teams received awards from Space Shuttle Program Manager Bill Parsons, and Robert Lightfoot, Assistant Associate Administrator of the Space Shuttle Program, in appreciation of the teams' efforts toward returning the Space Shuttle safely to flight.



Workers at PTD's Building 3225 (top photo) were recognized for their work in simulating the characteristics of ice and frost on External Tank foam, and for preparing the E-1 Test Stand for flow-liner testing. Parsons told the crowd at Building 3225, "You've done an outstanding job. You've got a great reputation, great reliability and you deliver on schedule and on cost. We appreciate what you've done for the Space Shuttle Program and for Return to Flight."

Workers at the A Test Complex (bottom photo) were recognized for their work in restoring and reactivating the A-1 Test Stand to enable testing eight of nine SSME Main Engine Controllers for the Return to Flight mission. SSC Center Director Adm. Thomas Q. Donaldson V, USN (Ret.) told the award recipients: "Your efforts, all on time, on cost, serve us well. I'm looking at the NASA family, and I'm proud to be a part of it."

Inspiring
the next
generation . . .

as only NASA can

StenniSphere

Community Day

Celebrate SSC's Community Day, Saturday, Sept. 3, at 5 p.m. This family-oriented event includes astronauts, tours, exhibits and performances, ending with a Gulf Coast Symphony Orchestra concert and fireworks. Passes are required and available free at Chambers of Commerce in Slidell, La., in Mississippi's Hancock and Pearl River Counties, and at the Launch Pad, Hancock County Welcome Center, Interstate 10.

Winter Hours

Beginning Labor Day weekend, StenniSphere, the visitor center at SSC, will be open Monday-Saturday from 10 a.m. until 4 p.m.

SSC brought the excitement of Return to Flight to the region



Beginning in mid-April, NASA's Stennis Space Center (SSC) traveled a Return to Flight exhibit throughout Mississippi, Louisiana and Alabama to area malls, museums and planetariums, NASA Explorer Schools and even a space music symphony concert.



More than 56,000 people at these events signed banners showing their support for the STS-114 mission on its crew.

Visitors to StenniSphere, toured the Return to Flight exhibit with displays featuring the Return-to-Flight mission and its crew and the role Stennis Space Center has played in returning the Shuttle to safe flight. The exhibit, with a scale model of a launching Space Shuttle as its centerpiece, features the Shuttle Launch Experience with detailed imagery of the Shuttle's preparation and launch, complete with sound effects.



Space Technology Hall of Fame taps Stennis-developed imager

Technology developed at NASA's Stennis Space Center to measure characteristics of cotton fields has now been tapped for induction into the Space Foundation's 2005 Space Technology Hall of Fame.

The Portable Hyperspectral Sensor array originated at the

Institute for Technology Development (ITD) at Stennis Space Center (SSC). It was designed to help Mississippi Delta farmers use remote sensing to detect plant stress and target insecticide applications over their crops. Hyperspectral sensors use a special camera to split a snapshot into 120 color-specific images, enabling identification of unique characteristics of crops that are invisible to the human eye.

The Portable Hyperspectral Sensor enabled the ability to "see" crops in more than just a few bands of color. Like an artist enabled by a wide range of paint colors, the sensor could give a much more complete representation of their targets, said Rodney McKellip of NASA's Applied Sciences Directorate (ASD) at SSC. McKellip is ASD's project manager for agriculture applications.

NASA joined forces with the U.S. Department of Agriculture to champion this use of remote sensing technology to be applied to "precision" farming method in a program called Ag 20/20. The program funded the mounting ITD's Portable Hyperspectral Sensors and other instruments on airplanes for such tasks as finding insect pest habitats, locating specific weeds in soybean fields, determining soil properties and checking plants for nutrient stress.

ITD technology development resulted in a portable version of a hyperspectral instrument based on



The patented, portable hyperspectral camera and its applications were developed by the Institute for Technology Development at NASA's Stennis Space Center.

the existing design that was much larger and heavier. The lighter, portable unit used in Ag 20/20 opened avenues for other applications of the system. ITD President and CEO George May said medical imaging applications hold the most promise, including those that support NASA's Vision for

Space Exploration and long-term spaceflight goals.

Hyperspectral sensors can help ophthalmologists study the movement of oxygen to the back of the eye, giving an accurate, noninvasive picture of an astronaut's health. Early detection of molds and toxins growing aboard space vehicles could also keep astronauts healthy in space.

McKellip called the system's versatility key to its winning the prestigious Space Foundation's Hall of Fame induction. The Hall of Fame honors innovators who transform space-based technology into products and services that improve life on Earth.

"We like to say SSC was the birthplace of this sensor," May said. "If it weren't for the funding from NASA, and their believing in us, it wouldn't have happened. If it weren't for the agriculture community using and needing remote sensing technologies, it wouldn't have happened."

Along with Mark Nall of Marshall Space Flight Center in Alabama (which funded ITD's medical applications research for the sensors), McKellip, May and five of May's ITD colleagues were honored for their work to develop and commercialize the sensors: Jim Beach, David Lewis, Mark Lanoue, David Smith and Chengye Mao.

SSC employees receive pres



Dr. Julian M. Earls, Marina L. Benigno, SSC Director Adm. Thomas Q. Donaldson



Dr. Julian M. Earls, Pat Mooney and wife, SSC Director Adm. Thomas Q. Donaldson

effectively use SSC resources, and her active support of the Combined Federal Campaign fund-raising drive, Special Olympics and other community events.

Mooney is a technical management aerospace technologist in the Propulsion Test

Directorate at SSC and a resident of Lacombe, La. He was given the award for his long-term unwavering technical and managerial excellence in rocket engine testing, a career that has spanned nearly 45 years from the Apollo Saturn V Program to Space Shuttle Main Engine testing.

Mary R. Byrd, branch chief for test support in the Propulsion Test Directorate at SSC, was presented NASA's prestigious Space Flight Awareness Leadership Award. The NASA Space Flight Awareness Award recognizes outstanding leaders who exemplify loyalty, empowerment, accountability, diversity, excellence, respect, sharing, honesty and integrity.

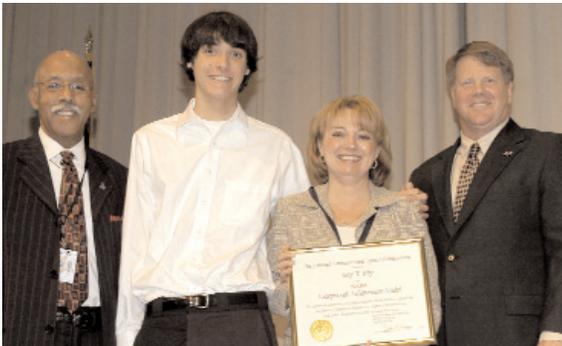
Byrd, a resident of Slidell, La., was given the award for her role in modernizing SSC's A Complex Test Control Center, and for identifying and prioritizing future maintenance projects for Space Shuttle Main Engine test support facilities.

Gay T. Irby, Rena L. Perwien and Lionel J. Dutreix were awarded NASA's prestigious Exceptional Achievement Medal.

The NASA Exceptional Achievement Medal is given for a significant, specific accomplishment or contribution that significantly improves operations, efficiency, service, financial savings, science or technology that contributes to NASA's mission.

Irby, deputy chief, Office of the Chief Information Officer for the Center Operations Directorate at SSC, a resident of Long Beach, Miss., was given the award for her sustained commitment to supporting the NASA mission, specifically the agency's Enterprise, Architecture, Agency Chief Information Officer initiatives and center documentation and outreach functions.

Perwien, deputy chief financial officer for Resources



Dr. Julian M. Earls, Gay Irby and son, SSC Director Adm. Thomas Q. Donaldson



Mary R. Byrd

Employees of NASA's Stennis Space Center (SSC) were presented with NASA Honor Awards during a ceremony held at SSC on Thursday, June 9. SSC Center Director Adm. Thomas Q. Donaldson V, USN (Ret.) and NASA's Glenn Research Center (Ohio) Director Dr. Julian M. Earls presented the awards.

NASA's Marina L. Benigno and Pat F. Mooney were presented with the J. Harry Guin Outstanding Leadership Award, which recognizes an individual who has provided exemplary leadership that has significantly enhanced the role, capability, or professional recognition of SSC within the nation's space, scientific or administrative communities. The award is named in honor of J. Harry Guin, a former director of SSC's Propulsion Test Directorate.

Benigno is director of the Center Operations Directorate at and a resident of Gulfport, Miss. She was given the award for leading her organization to increase efficiency, lower costs and

tigious NASA Honor Awards

Management in the Business Management Directorate at SSC, a resident of Kiln, Miss., was given the award for her exceptional contributions to SSC's implementation of Integrated Financial Management Programs, e-Payroll and Full Cost budgeting and management.



Dr. Julian M. Earls, Rena L. Perwien, SSC Director Adm. Thomas Q. Donaldson



Dr. Julian M. Earls, Lionel J. Dutreix and family, SSC Director Adm. Thomas Q. Donaldson

Dutreix, deputy chief of the Propulsion Test Directorate's Operations Division at SSC, a resident of Slidell, La., was given the award for dramatically enhancing the value, quality and scope of NASA's rocket propulsion testing services through innovative leadership and technical excellence.

Christopher A. Mulkey, mechanical experimental equipment aerospace technologist for the Propulsion Test Directorate at SSC, was given NASA's prestigious Peer Recognition Award for Professional Achievement.

The Peer Recognition Award for Professional Achievement recognizes employees whose careers and accomplishments demonstrate the highest qualities of achievement and professionalism in the employee's chosen field. The nomination and selection process is made by fellow employees. Mulkey, a resident of Slidell, La., was given the award for aggressively supporting the buildup, activation and testing of the Space Shuttle's External Fuel Tank insulation at SSC's E-2 Test facility.

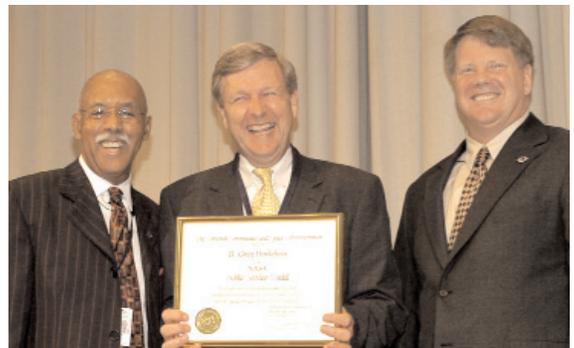
John A. Wilson and Greg Hinkebein were awarded NASA's prestigious Public Service Medal. The NASA Public Service Medal is given to an individual who is not a government employee. It recognizes excep-



Dr. Julian M. Earls, Christopher A. Mulkey, SSC Director Adm. Thomas Q. Donaldson

tional contributions to NASA's mission.

Wilson, InDyne Inc.'s Education Program Development Director for the Infinity Science Center at SSC, is a resident of Lyman, Miss. He was given the award for designing an innovative national program, "FMA Live! Where Science Rocks." The live stage production uses actors, music and demonstrations to teach students science principles. Sponsored by Honeywell International Inc., the show has traveled across the country, winning accolades from NASA Headquarters as well as from students and teachers. Wilson also provided technical assistance to establish and implement a successful remote sensing education and training program for Mississippi.



Dr. Julian M. Earls, Greg Hinkebein, SSC Director Adm. Thomas Q. Donaldson



John A. Wilson

Hinkebein was given the award for his support of the competition for the location of NASA's Shared Services Center, which will consolidate financial and resource functions into one location. He resides in Pass Christian and Madison, Miss.

HONOR AWARDS

Continued from Page 17



Group Achievement Award: A-1 and E-1 Flowliner Team



Dr. Julian M. Earls, Kenneth Volante,
SSC Director Adm. Thomas Q. Donaldson



Group Achievement Award: Integrated Natural Resource Management Team



Dr. Julian M. Earls, Cecil Mills,
SSC Director Adm. Thomas Q. Donaldson

SSC's A-1 and E-1 test stand project teams received a Group Achievement Award for activating the stands for testing the Shuttle flowliner. Recipients included NASA's Beth L. Bradley, Michael P. Nichols, David P. Roberts, Philip W. Hebert, Ronnie D. Rigney, Jared P. Sass, Mark S. Hughes, Ryan E. Roberts, Gary O. Taylor; Pratt & Whitney Rocketdyne's Brian D. Childers, Mickey R. Reid, Christine P. Zeringue, Basab K. Mukerji, Donnie R. Walters; Sverdrup Technologies' Terrence D. Burrell, David W. Harriel, Kenneth L. Powe, Gregory K. Conn Sr., Paula L. Hensarling, Richard S. Spooner, Scott R. Gipson, Daniel W. Lewis, Fran L. Songy; Mississippi Space Services' Kenneth A. Broom, Angela M. Lee, Stanley E. Mitchell, Donald N. Caudill, Frank J. Lorusso Jr., Floyd Jerry Holland and Robbie D. Miller Jr.

The Integrated Natural Resource Management Team was also presented a Group Achievement Award for its management and protection of the diverse natural resources that are vital to SSC's operations. Recipients included: NASA's Hugh Carr, Applied Geo Technologies' David

H. Golden, Joy F. Parikh, Quinn T. Kelly; Corps of Engineers' Craig J. Case; Mississippi State University's Jeanne C. Jones and Donald L. Grebner.

NASA's Kenneth E. Volante and the Center of Higher Learning's Cecil E. Mills were each presented with the Director's Certificate of Appreciation. Volante developed and continually improves the Construction Safety Program at SSC, and created a system to identify, track and trend safety-related issues throughout the construction process. Mills has contributed to the growth of SSC for four decades, initiating and securing funding for a variety of institutions on site. He was also involved in securing funding and support for the NASA Shared Services Center.

Length of Service Awards were presented for the following: 25 years – Clyde Dease, Charles M. Fallo, Rena L. Perwein, Warren L. Wood; 30 years – James E. Anderson, Jonathan N. Etheridge; 35 years – James M. Bobinger.

AROUND OUR WORLD

SSC Director speaks to Louisiana legislative group



SSC Director Adm. Thomas Q. Donaldson (pictured with Michael Olivier, Secretary, Louisiana Economic Development) thanked the Louisiana legislature for their efforts in helping to attract the NASA Shared Services Center to SSC, and also gave an update on the center's economic impact to the region.

NOAA offices provides detailed look at Gulf of Mexico seasonal 'dead zone'

For the second year in a row, NOAA offices in Mississippi has teamed up to provide near real-time data about dissolved oxygen from the seasonal hypoxic area, or "dead zone," in the Gulf of Mexico. Scientists from NOAA's National Coastal Data Development Center (NCDDC) and NOAA Fisheries Service at Stennis Space Center (SSC) and Pascagoula, Miss., posted online maps of dissolved oxygen near the sea floor from Texas to Louisiana.

This "dead zone" begins to form in June and extends from the mouth of the Mississippi River westward to Texas. Hypoxia occurs when the amount of dissolved oxygen in the water becomes too low to support most marine life, including shrimp, crabs and fish.

Dissolved oxygen contour maps, maps of actual sampling station locations, and corresponding sea surface temperature and chlorophyll-a maps from the NOAA CoastWatch program are available to the public at <http://www.ncddc.noaa.gov/ecosystems/hypoxia>

Community mapping program moves to the Institute for Technology Development



The Orton Family Foundation has transferred its award-winning Community Mapping Program to the Institute for Technology Development (ITD), a Mississippi-based nonprofit research institute affiliated with NASA. Building on the foundation's six year effort to design, pilot and launch this place-based youth education program – newly renamed CMap – ITD will apply its background in technology and product development to expand the program's reach to more youth and communities across the country.

Classrooms and after-school programs like 4-H are currently integrating Community Mapping projects into curricula and community-service initiatives in eight states.

For more information about CMap, contact Connie Knapp at cknapp@iftd.org or Matt Bethel at mbethel@iftd.org. More information about CMap and the Institute for Technology Development can be found on their web site at

NAVO's HUSCy vehicle debuts at 2005 AUV Fest

The Naval Oceanographic Office (NAVOCEANO) based at Stennis Space Center uses a variety of platforms to collect oceanographic data. The command's newest survey technology, the hydrographic unmanned surface craft (HUSCy), made its first survey appearance in June alongside other surface craft at the Autonomous Underwater Vehicle (AUV) Fest in Keyport, Wa.



The Hydrographic Unmanned Surface Craft (HUSCy) performs trials in the Pearl River at SSC.

Although the vehicle is still a few months from contract acceptance, the HUSCy proved reliable and flexible. During her debut at AUV Fest, she successfully conducted environmental data gathering surveys providing sonar imagery, depth, currents and sound velocity to the AUV Fest operations center manned by NAVOCEANO personnel.

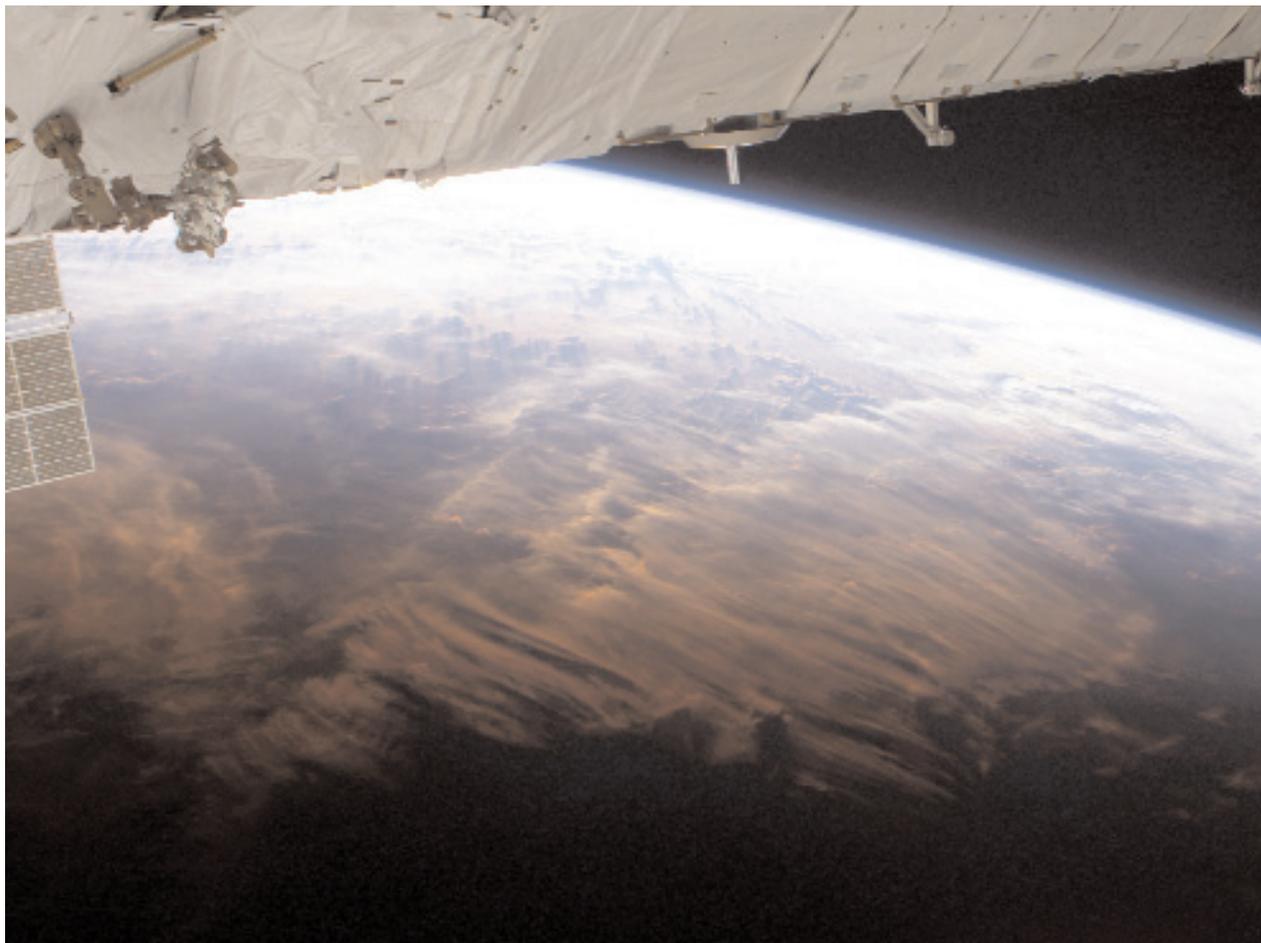
Designed to conduct both environmental data-gathering missions in support of expeditionary warfare and also to conducting hydrographic single beam surveys, the HUSCy is capable of autonomous or remotely controlled operations. The craft operates in shallow-water areas where human presence is undesirable or difficult, has a low logistic footprint and can be rapidly transported by commercial air around the world and operated from any platform of opportunity.

SSC holds Industry Day and Small Business Expo



The Acquisition Management Office at NASA's Stennis Space Center (SSC) sponsored Industry Day and Small Business Expo 2005 on Aug. 17. Nearly 550 people attended at the Convention Center Bay Tower Hotel, Casino Magic Resort, in Bay St. Louis, Miss. The expo featured 48 booth displays from SSC's resident agencies, offering information about SSC and NASA programs to help industry and small business personnel develop business opportunities with SSC.

Earth in Perspective



The STS-114 Space Shuttle crew captured this view of Earth from the Shuttle-Stations complex on day nine of the Return to Flight mission.



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